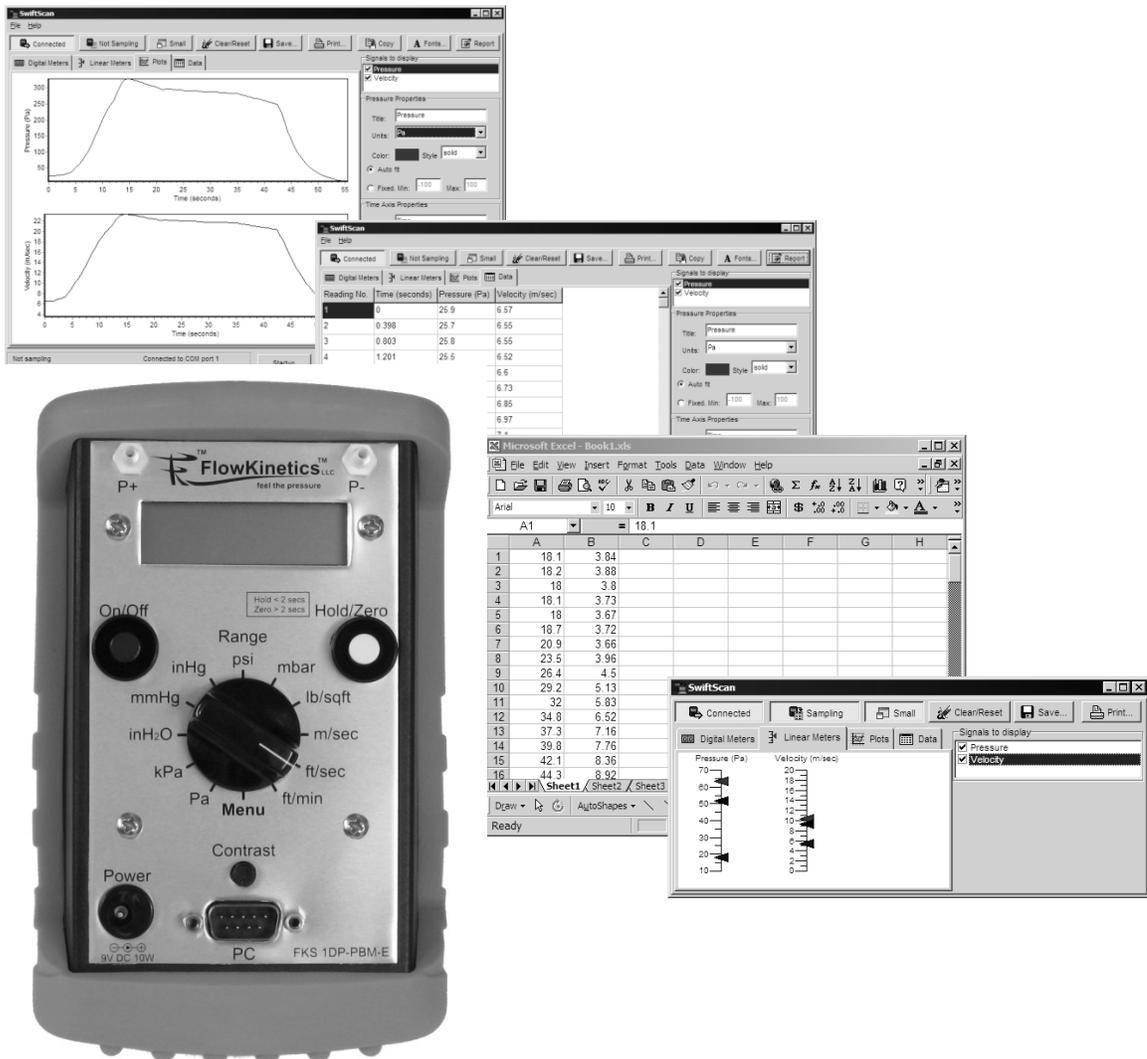




SwiftScan User Manual



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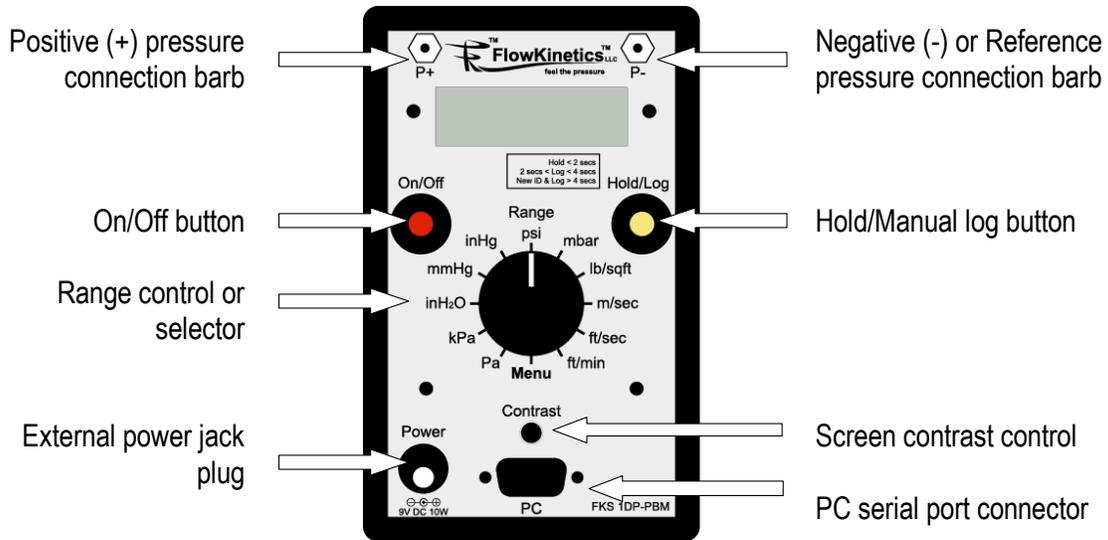
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Getting Started

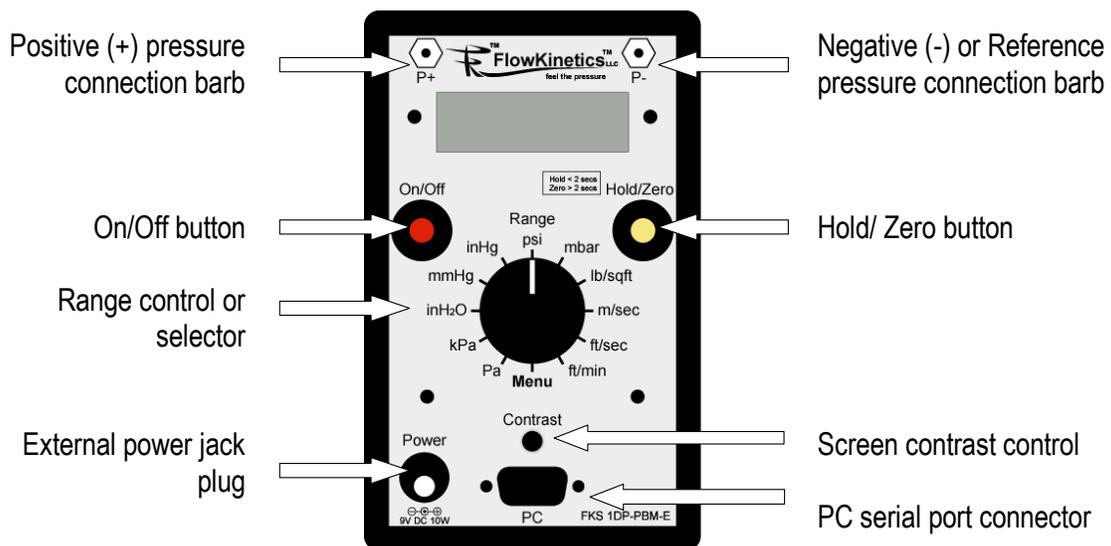
Manometer Layout

The main components of the FlowKinetics manometer that are referenced in this manual are shown below.

FKS 1DP-PBM



FKS 1DP-PBM-E



Requirements

- FKS Series instrument
- Microsoft Windows 95 or later.
- Intel 486 class or later processor
- Microsoft Excel 97 or later for spreadsheet sessions
- Video capable of at least 800x600 resolution
- A serial port with a 9-pin connector capable of 9600bps or a USB port.

Installation

1. Make sure that any previous versions of SwiftScan are uninstalled.
2. Close all running applications.
3. Insert the CD or thumb drive in the computer and the installation should start automatically. If the installation does not start automatically then open the drive and run the file **setup.exe**.
4. Follow the instructions on the installation routine.
5. If you ordered the USB to serial adapter (Part USBA) install the driver for the version of Windows that you are using. The USBA driver is in the small CD that was included alongside the FlowScan disk. You can also download the driver from our site (www.flowkinetics.com). After the driver is installed, plug in the USBA adapter into the computer and windows should recognize it automatically.
6. Once SwiftScan is installed connect the manometer port to the computer serial port or USB adapter using the supplied cable. Turn on the manometer and run SwiftScan from the desktop, the start menu, or the Quick Launch toolbar in Windows 98 or later (Depending on the installation options).
7. If you have any other software or instrument driver that utilizes the serial port please disable it before using SwiftScan to avoid hardware conflicts.



Turn off the instrument before connecting or disconnecting the serial cable.

Startup Screen Elements

When SwiftScan starts the screen below is displayed:

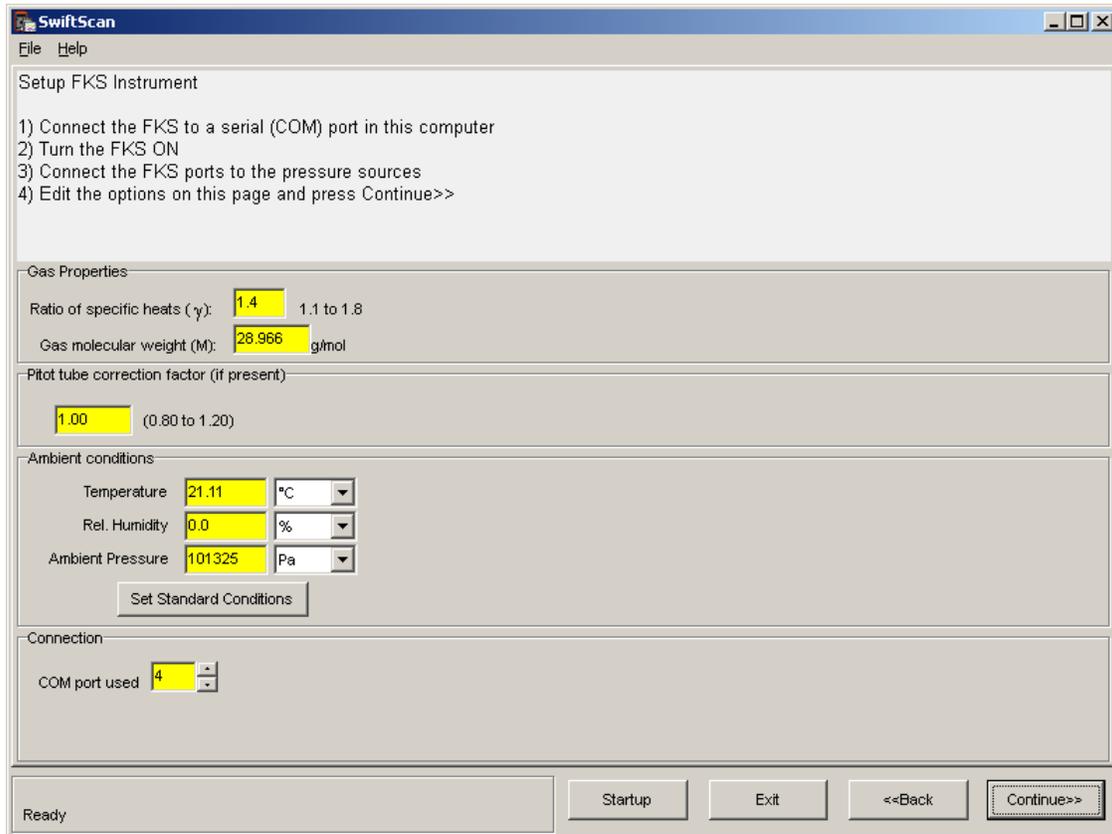


The flow of the program is controlled by the **<<Back** and **Continue>>** buttons at the bottom of the SwiftScan window. SwiftScan works in a step-by-step process. SwiftScan will ask questions as it prepares the manometer for the different modes of operation as the user clicks on the **Continue>>** button. The **<<Back** button allows the user to change previously entered parameters. Repeatedly using the **<<Back** button will take the user to the SwiftScan startup screen. Pressing the **Startup** button will take the user directly to the Startup screen. You can press **Exit** (or press Ctrl+X) to quit SwiftScan.

The bottom **status panel** shows the sampling progress, connection status, port used, time elapsed since the first sample and auto-save information. The **File** menu contains the print setup command and the **Help** menu contains a link to the help documentation and a SwiftScan about box indicating version and contact information.

Setting up the system

For each of the options selected in the startup screen the following options must be set. SwiftScan stores them at shutdown so the previously used options will be available. These options are explained below.



Gas properties

SwiftScan needs to know what type of gas it is being used. The default values listed are for air.

Pitot Tube Correction

If a Pitot tube is used to determine flow speed its correction factor must be entered here. It is usually 1.0 but the vendor or manufacturer of the Pitot provides you with this value.

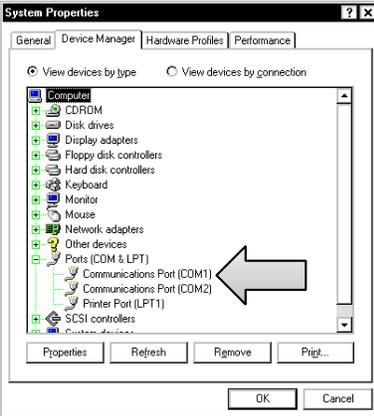
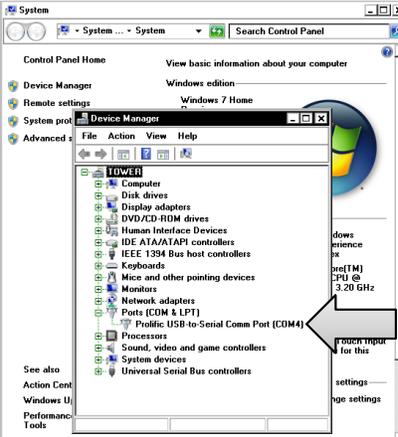
Ambient Conditions

If you are recording speed enter the values of temperature, pressure and relative humidity present in the test.

Connection

SwiftScan needs the **serial port number** that the computer is using to communicate with the manometer. This number (also referred as the COM port) can be found by

using the **System Properties** contained in Windows' **control panel** as shown below. In recent versions of Windows the **Device Manager** is located in the **Hardware** tab of the **System Properties** section.

Windows 95 / 98	Windows 2000 / XP	Windows Vista / 7 / 8 / 10
 <p data-bbox="251 877 454 903">COM Port Number 1</p>	 <p data-bbox="690 1024 893 1050">COM Port Number 2</p>	 <p data-bbox="1112 924 1315 949">COM Port Number 4</p>

Data Logging / Sampling Options

Data logging allows the user to collect differential pressure or speed according to the ambient conditions entered. Differential pressures are recorded using the supplied tubing. The speed is acquired using the optional Pitot probe connected to the differential pressure ports on the manometer.

Logging options

- SwiftScan can sample continuously or for a determined number of times.
- Setting the number of readings to one will make SwiftScan act as in single sample mode.
- Entering a sampling interval of zero will force SwiftScan to read the data from the instrument as fast as possible.
- If the instrument has damping active the sampling interval will need to be larger to account for the time the instrument needs to calculate the damped values.

Sampling options

- For each sample SwiftScan can take several readings.
- If you want the readings averaged and saved as a single value then check Average. The time stamp for averaged samples is the average time of the readings per sample. So if two readings are taken for a sample at t=1 and t=3 seconds then the averaged time stamp for the sample is at t=2 seconds.
- If Average is not used then the values are stored as a group. In this case each reading has its own time stamp as obtained from the instrument.

Autosave options

To avoid loss of data in case of computer failure the autosave option is on by default. This will save an ASCII file with the stored data to disk at intervals selected by the user.

Excel Connection

SwiftScan can host a session with Excel so you can transfer data directly into a spreadsheet. You can connect and create a new Excel file automatically or use an existing file. You can also select the sheet number that you want to save data into. The sheet number is the number of the workbook sheet counting from the left as it is shown in Excel. You can also select the starting cell where the data will be written. The options are explained below.

- Check **Enable connection** to activate the link between Excel and SwiftScan. For the link to work Excel must have run at least once after its installation so that it can initialize in Windows.
- **Include reading number** writes this number as the first column in the data.
- **Include time** writes time with respect to the first measurement as the second column using the current time units.
- **Include headers** will add a top header with the name and units for pressure, speed and time.

- To auto-increment the position of the insertion cell in the spreadsheet check **Auto-increment row after each sample**. If this option is disabled the value will be overwritten.
- **Include local date** will add a column with the computer's date for each reading.
- **Include local time** will add a column with the computer's time for each reading.

When you press **Continue>>** SwiftScan connects to Excel and behaves as follows:

- If Excel is not running then SwiftScan will start Excel and open the workbook.
- If Excel is running but the workbook is not loaded Excel will automatically open it.
- If Excel is running with the workbook loaded it will use it as is.
- If Excel or the workbook are not found then the Excel connection is disabled.
- When the workbook is loaded the selected sheet will be active and the starting cell will be selected.
- SwiftScan will stay on top of all windows as long as the Excel connection is active.
- When you close SwiftScan Excel will stay open with the workbook loaded.



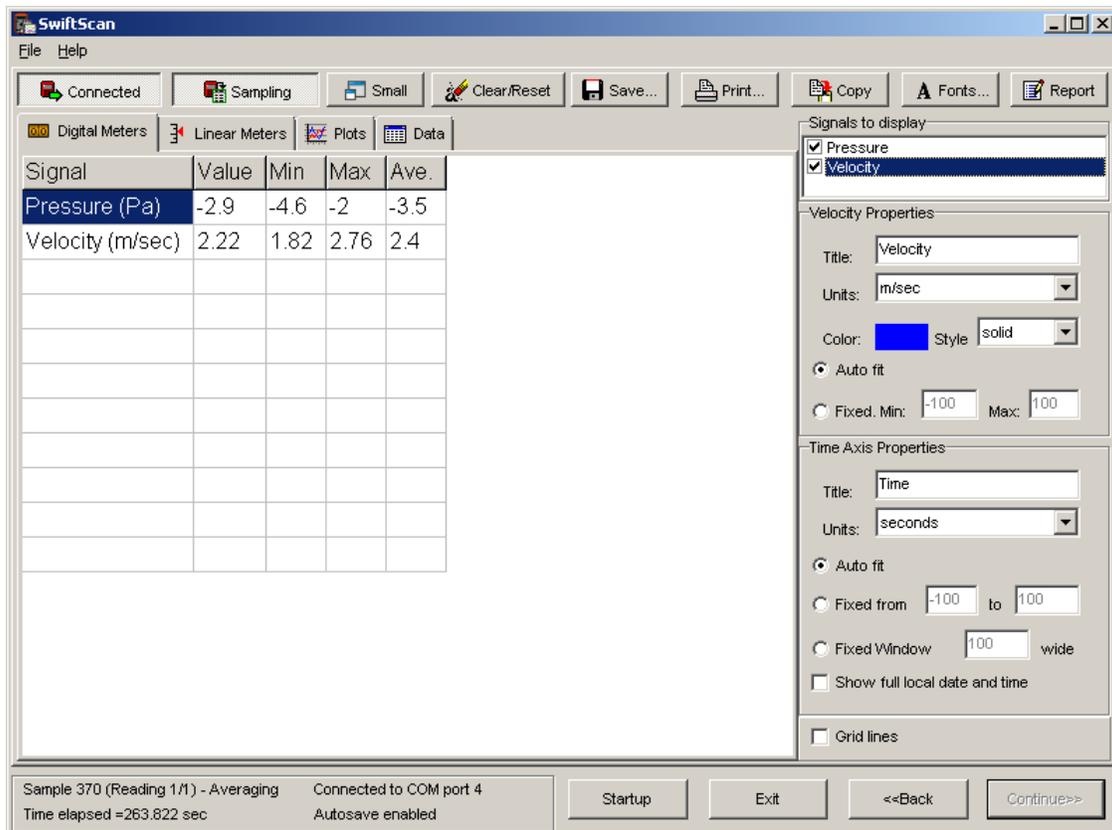
Do not edit the Excel worksheet while FlowScan is filling it with data. Doing so will result in an error and data loss.

Monitoring the signal

- Make sure the instrument is running and connected to the computer.
- A button on the top left will toggle the connection with the manometer. It will display **Connected** or **Disconnected** toggle it to **Connected** to establish a link between SwiftScan and the instrument and start monitoring the signals.
- If the instrument is not sending information to the computer SwiftScan will time out after 60 seconds and disable the connection. This usually happens because the instrument is switched off or not connected to the right port.
- SwiftScan can show two monitoring modes: **Digital** and **linear** meters. **Plots** and **Data** show the stored data only.
- Pressing **Clear/Reset** resets the min, max and average values for each signal.

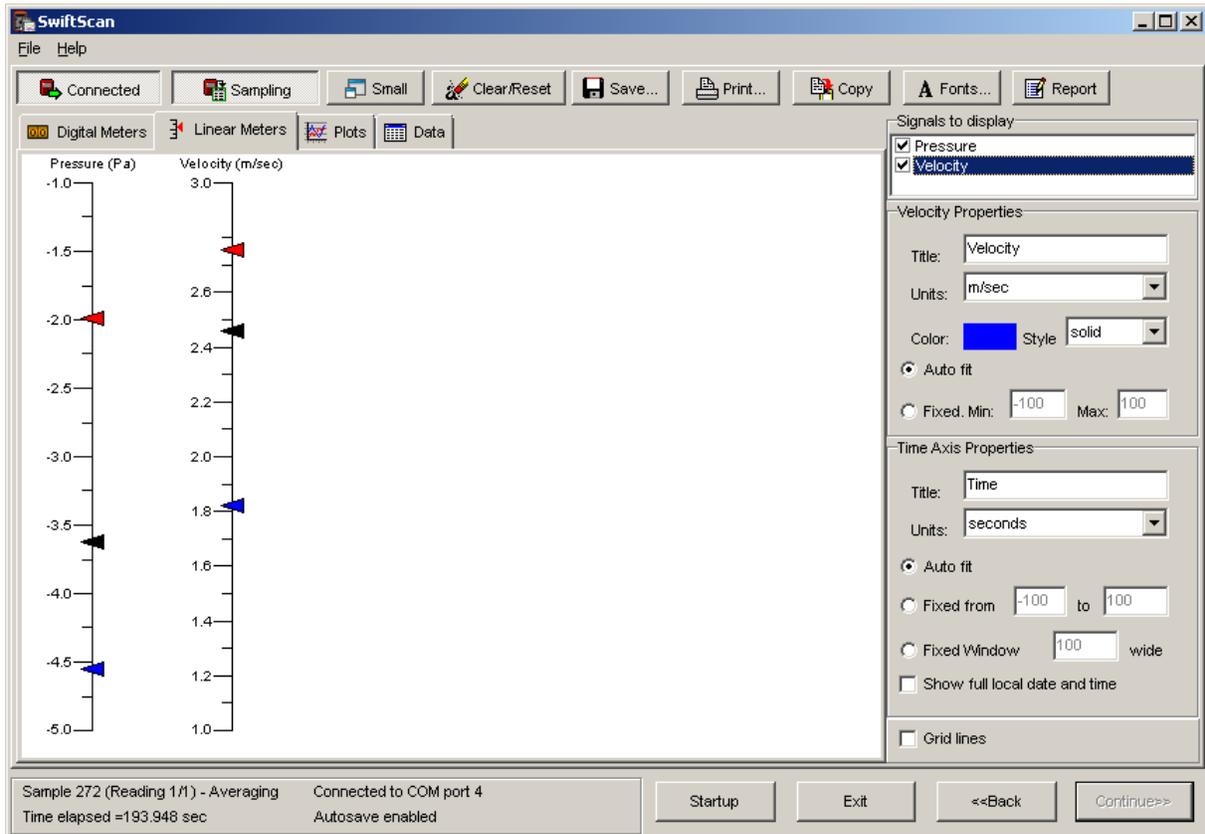
Digital Meters

- This shows the signal name, units and current value. It also stores the minimum, maximum and average values for the signal for the time that SwiftScan is connected to the instrument.
- You can save the current meter readings by pressing the **Save...** button.
- You can also print the meter values using the **Print...** button
- To copy the meter values into the clipboard press the **Copy** button.
- To change the font used by the meter press the **Fonts...** button.



Linear Meters

- The gauges automatically scale to the min/max values for the signal to the closest whole number.
- The actual minimum and maximum values are shown by the red and blue triangles.
- The current value is shown by the black triangle.
- To change the font used by the meter press the **Fonts...** button.



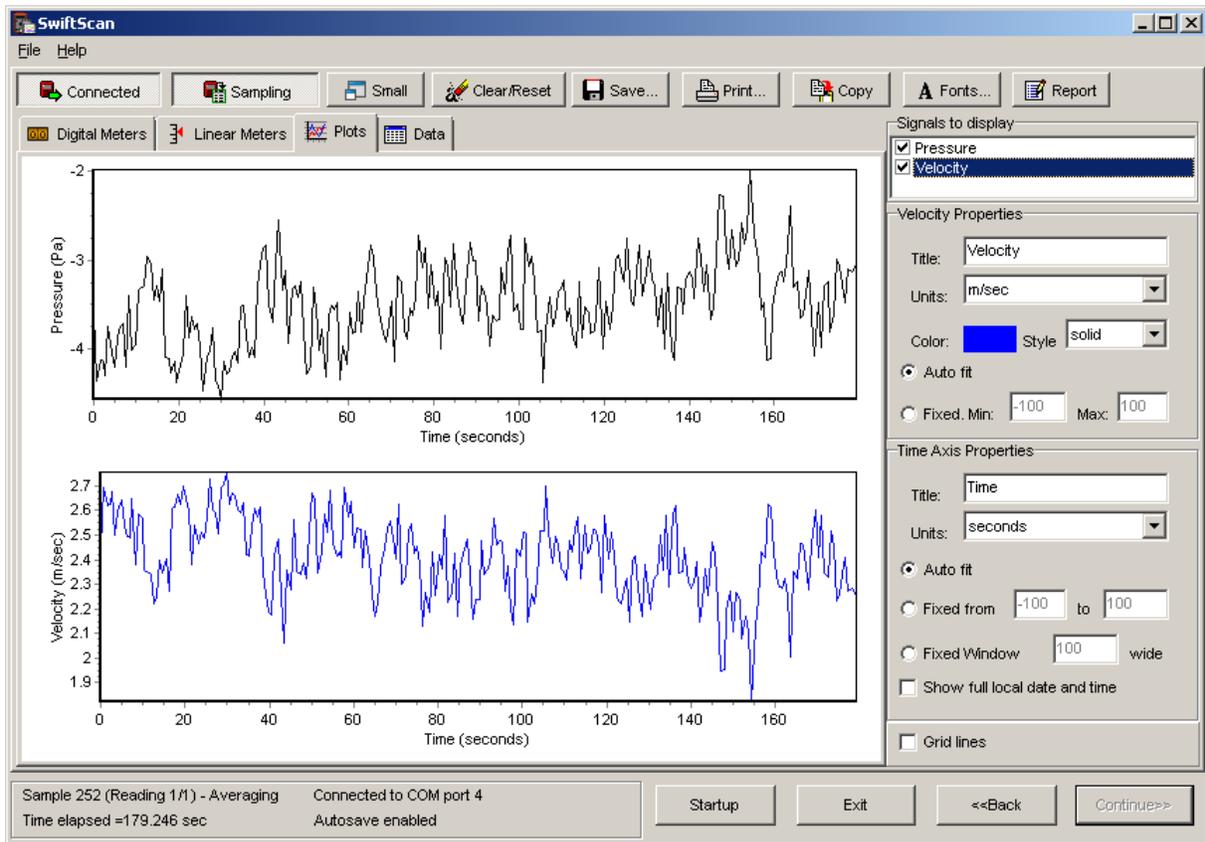
Storing the signal

To store the signals, using the logging options, toggle the **Not Sampling/Sampling** button. The Plot and Data tabs as well as the Excel workbook will fill with the data as it is recorded. Pressing the button again will stop the sampling. When you start sampling data the time at the first reading is zero.

Pressing the **Clear/Reset** button will erase all stored signals from the plot and data tabs. This is useful when a new data set is needed. This also resets the time signal so the next acquisition will start at zero. Press **Report** to create an editable report that contains all the stored data.

Plots

- This shows the stored samples for each signal as time history plots.
- To change the font used by the plots and the legend press the **Fonts...** button.
- By pressing **Save...** the plots can be saved into three formats:
 - Windows Metafile (*.wmf): Most graphics and word processor programs can read these images. This format allows the picture to be scaled without any loss of resolution because it is a vector format.
 - Windows Bitmap (*.bmp): These are also very compatible but since they are raster format they are not scalable and are more appropriate for screen presentations. The size of the bitmap will be the one present on the plot window at the time the image is saved.
 - Windows Enhanced Metafile (*.emf): Another vector format very similar to the Windows Metafile. It works with more recent software and provides better control. As it is a vector format it is fully scalable without loss of resolution.
- Press **Copy** to send the plots to the clipboard in metafile format so that they can be easily pasted into word processors or presentation software.
- Press **Print...** to send the plots to the printer as a full page using the aspect ratio of the plot window at the time of printing.
- To **zoom** the plot, draw a rectangle from top left to bottom right on the plot using the mouse while pressing the left button. To un-zoom draw a rectangle in reverse from lower right to top left.



You can use the panel on the right to control many of the plot properties. Making a change on that panel also changes Data and Meter text. Select the signal that you want to edit before changing the values below.

Pressure/Velocity Properties:

- **Title:** The title is used as the name of the signal and in the vertical axis title of the plots if they are displayed tiled. If the plots are layered the legend will show the titles.
- **Units:** The units that the signal uses can be changed here. The units name will be appended to the title in the plot axis if they are tiled.
- **Color:** This is the line color for the signal
- **Style:** This is the line style for the signal
- **Auto Fit:** If the plots are tiled the vertical axis will automatically fit the signal
- **Fixed:** If the plots are tiled the vertical axis for this signal will be confined to the range **min** to **max**.

Time Axis Properties:

- **Title:** The title is used as the name of the horizontal axis of the plots (tiled or layered).
- **Units:** The time units are common for all signals. The units name will be appended to the title in the plot axis (tiled or layered).

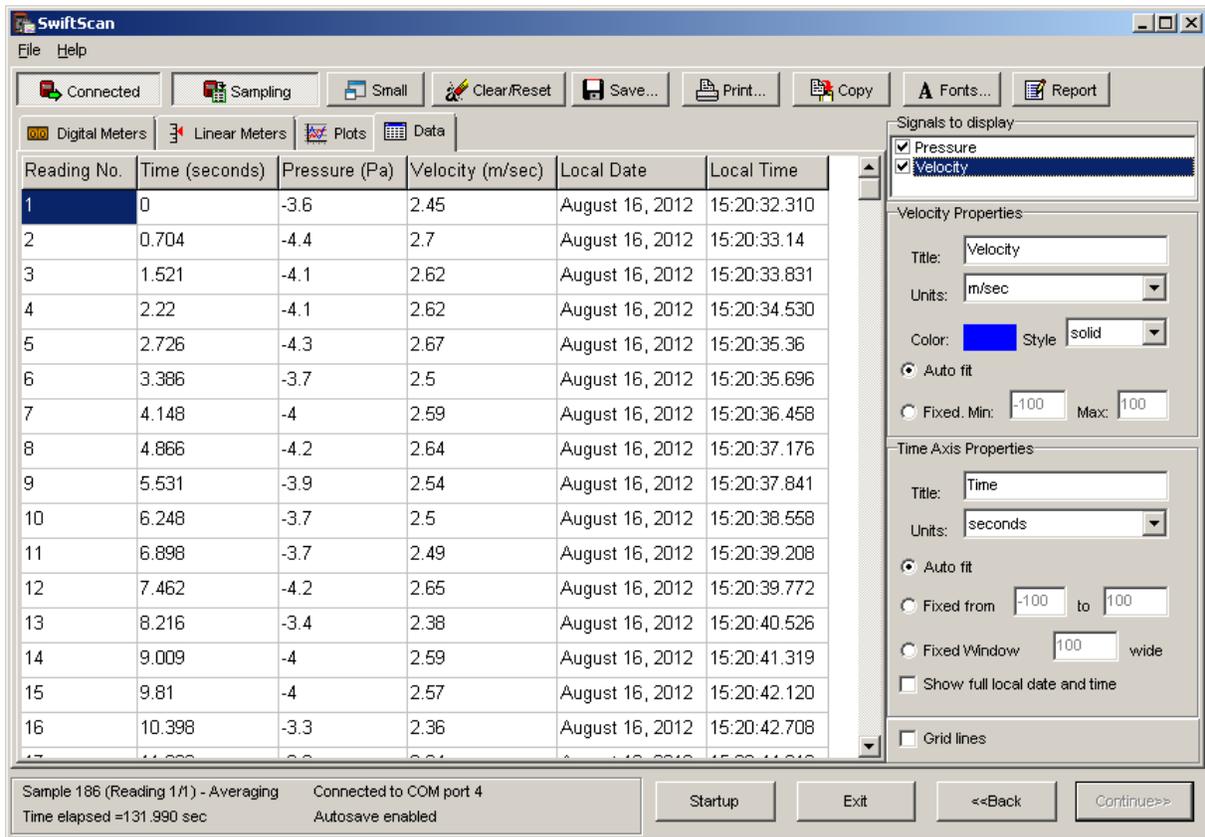
- **Auto Fit:** The time axis will automatically fit all the signals.
- **Fixed:** The time axis range for all signals will be confined to the range **min** to **max**.
- **Fixed Window:** The time axis range will be confined to a window in which the left edge will be the latest signal data.
- **Show full local date and time.** Enabling this option will display all the data with the date and time on the time axis. Other time options will be disabled. The date/time labels will be spaced automatically and will appear after a few seconds of data collection.

Arrangement:

- **Grid Lines:** toggles grid lines on all the visible plots. Spacing is automatic.

Data

- You can view the stored data in this tab as a table.
- To change the font used by the table press the **Fonts...** button.
- Press **Save...** to store the data table in any of these three ASCII formats:
 - Space Delimited Text (*.txt): These are the most common text files. They will have spaces between the numbers and between the headers. Most if not all software and plotting utilities can open this type of data file. Each heading is enclosed in quotes so that spaces in the signal titles will be kept in the file.
 - Tab Delimited Text (*.prn): Similar to *.txt but uses tabs instead of spaces for delimiters. These files are more suited for spreadsheet programs. Headings are not enclosed in double quotes because spaces in the titles are not counted as delimiters in this format.
 - Comma Delimited Text (*.csv): Uses commas as the only delimiter among numbers and among headings. Most spreadsheet programs will read this type of file directly. Headings are not enclosed in double quotes because spaces in the titles are not counted as delimiters in this format.
- Press **Copy** to send the data table to the clipboard formatted in columns so that it can be pasted onto applications ready for printing. The fonts used control the size of the copied table.
- Press **Print** to send the data table to the printer formatted in columns and aligned to the top of the page. The fonts used control the size of the printed table.



As with the plots and meters you can use the panel on the right to control the signal names and units.

Select the signal that you want to edit before changing the values below.

Pressure/Velocity Properties:

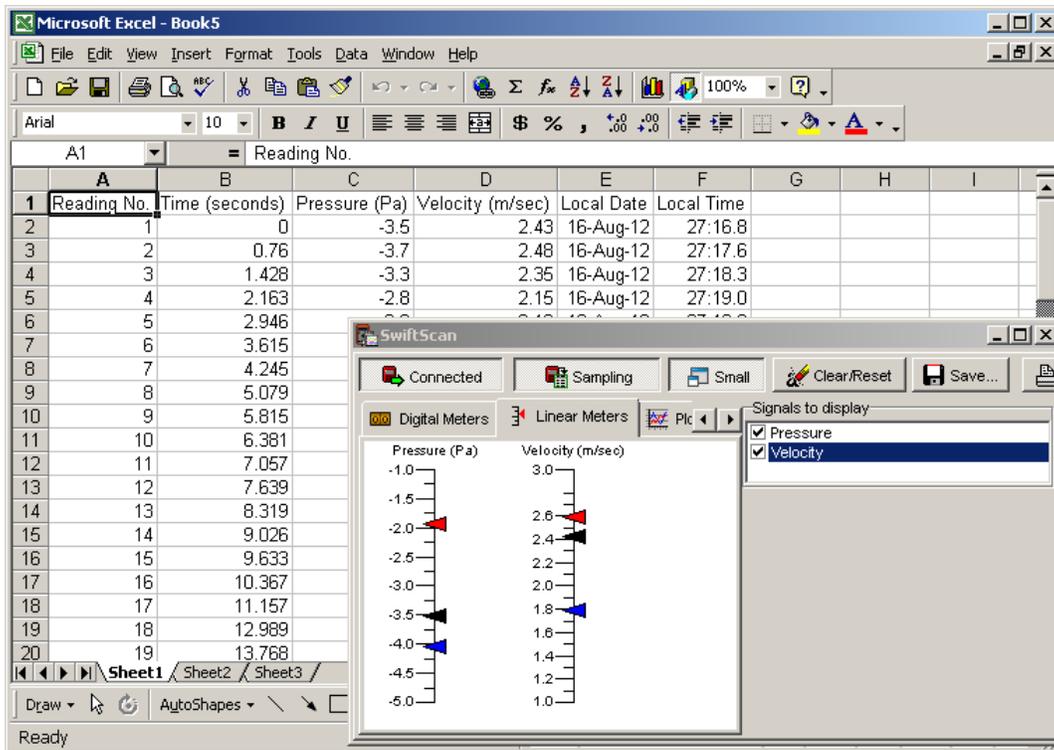
- **Title:** Besides the plots the title field is also used as the name of the signal column on the data table.
- **Units:** The units that the signal uses can be changed here. The data will be automatically scaled and the units name will be appended to the column title at the top of the table.

Time Axis Properties:

- **Title:** The title is used as the name of the horizontal axis of the plots (tiled or layered).
- **Units:** The time units are common for all signals. The units name will be appended to the title in the plot axis (tiled or layered). This option is not available if **Show full local date and time** is enabled.

Excel workbook

- If you are running the Excel connection the cells will also start filling when you toggle **Not Sampling/Sampling**.
- If the Auto-increment row after each sample option is enabled then every time SwiftScan sends a value to spreadsheet the insert cell row position is increased by one.
- SwiftScan automatically displays on top when Excel is connected.
- Toggle **Small** to decrease the size of SwiftScan's window so you can use it easily on top of Excel as a signal monitor.
- Pressing **Clear/Reset** will force new numbers to be inserted at the top of the worksheet columns.
- When you close SwiftScan Excel will stay opened with the workbook loaded.



 Do not edit the Excel worksheet while FlowScan is filling it with data. Doing so will result in an error and data loss.